

Drive & Control profile

Servo Control Offers Multifeatures to Multipack Cartoner



Cambopak multipack machine supports cartonboard enclosures for a wide range of beverages.

Efficient bottle cartoning and built-in safety with Bosch Rexroth's GenNext™ automation technology. Today, beer, lemonade, cola, water and mixed drinks are mainly filled in glass or plastic bottles (PET, PP, etc.). Many of these beverages come in multipacks made from cartonboard.

For a milk-based beverage, Van Genechten Nicolaus GmbH has developed a complete packaging

solution for a cartonboard multipack. An important part of this concept is the Cambopak multipack machine designed and built with Wilhelm Fischer Spezialmaschinenbau GmbH in close cooperation with the food and packaging team from Bosch Rexroth. The Cambopak has now been enhanced and improved with innovative electric drive and control technology from automation supplier Bosch Rexroth.

Challenge

Improve performance of automated beverage cartonboard multipack machine

Bosch Rexroth Solution

- Bosch Rexroth GenNext™ technology
- IndraDrive servo drives
- IndraDyn AC servo motors
- PC-R22 integrated motion and logic controller
- VisualMotion 10 software

Benefits

- Tighter synchronization of motion and logic enables faster changeovers, reduced downtime, and increased throughput
- Infeed, package forming, tensioning/gluing and end folding operations all handled by intelligent drives
- Electronic cam profiles can be manipulated online
- Drive-integrated safety features protect operators while minimizing machine downtime



The Rexroth IndraDrives perform all the important safety functions without additional hardware or detours through the control system.

After they have been filled, closed and sleeved, bottles are fed into the Cambopak by a transport chain, which accumulates them as required. Single-row (1 x 2 or 1 x 3) or double-row (2 x 2 or 2 x 3) bottle combinations are then formed in the machine, according to the pack configuration that is being produced.

Rexroth IndraDrive servo drives and IndraDyn AC servo motors synchronize the following operations: the rotary infeed system with large-capacity magazine; the forming of the cartonboard blank around the bottle combination in synchronization with the product; the tensioning and gluing of the pack; and the end folding operations, which gives the multipack greater stability. Size changes are now easier with the help of the new servo control technology.

Servo drives with certified safety technology on board

The Cambopak has four servo axes controlled by Rexroth's GenNext™ drive solution,

IndraDrive C servo drives with integrated safety technology.

Integrated safety is relatively new to the food and packaging industry, and putting safety features directly in the drive has many advantages over conventional approaches. Due to the independent monitoring in the drive, short response times are achieved when faults occur. This helps to effectively protect operating personnel when using the highly-dynamic servo drives in case a jam needs to be cleared behind the machine guard. The Rexroth IndraDrives perform all the important safety functions on a decentralized basis at the drives and motors without any additional hardware or detours through the control system. In comparison to conventional safety concepts, this means that power contactors are not needed in motor supply lines and the amount of cabling in the control cabinet is reduced.

In addition to providing a safe working environment for the machine operator, downtime can also be minimized with the drive's "safely-reduced velocity" function. In the event of a jam, this allows safe access inside the machine while it is on-line instead of powering it down completely and then spending time resetting it. The drive-integrated safety technology is a main component for increasing machine output.

Overall, the heart of the system is the Rexroth PPC-R22 integrated motion and logic controller. The machine's central motion and sequence of operation is coordinated in the logic portion of the PPC. Motor synchronization is coordinated by the motion portion of the PPC. Rexroth's VisualMotion 10 software is used to program the system. Recipe or product changeover parameters are made directly through an HMI interface.



In addition to providing a safe working environment for the machine operator, the integrated "safely-reduced velocity" functionality of Rexroth's IndraDrive can also reduce downtime.



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Simple scalable architecture is guaranteed with the use of open standards like the SERCOS interface, which is the only standardized digital drive interface capable of the high-speed multi-axis synchronization required in the Cambopak machine. Core technological functionalities such as electronic cam profiles which can be manipulated online are integrated in the control system. In addition, OPC servers that enable extensive communication of production management data are available to connect with the HMI system and to a central plant floor information system. The “open” architecture of this system makes it simple to incorporate industry-standard fieldbus systems by using an optional plug-in interface card via Ethernet IP, Profibus-DP, DeviceNet, Interbus-S, or ControlNet in the case of communication with a downstream PLC.

The end result is a multipack cartoner machine capable of faster changeovers and reduced downtime, increased throughput with tighter synchronization of motion and logic, and built-in safety features to protect the machine operator.

Van Genechten Packaging is headquartered in Turnhout, Belgium, and is one of the largest manufacturers of folding cartons in Europe, with a total of twelve production locations. It holds a leading position in several markets, particularly with multipacks for beverages and dairy products, and supplies comprehensive solutions, i.e. the packaging material and the necessary packaging technology. The de Somer family that owns Van Genechten has been running the company since 1834, and the 6th generation is now responsible for corporate management.

Rexroth
Bosch Group